

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2004/004348

International filing date (day/month/year)
26.03.2004

Priority date (day/month/year)
25.06.2003

International Patent Classification (IPC) or both national classification and IPC
G01S7/03, H01Q3/26, G02F2/00

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with
- ☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-12

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5,9,11,15,16,19-21,24
	No: Claims	1-4,6-8,10,12,13,14,17,18,22,23
Inventive step (IS)	Yes: Claims	
	No: Claims	1-23
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV.

1. The International Search Division considers that there are 2 inventions covered by the claims indicated as follows:

I. Claims 1-12 directed to a HF signal control device providing a variable degree of coupling electrical energy.

II. Claims 13-24 directed to an HF signal control device converting a laser beam into an electromagnetic wave.

The present application has been deemed to contain 2 inventions which are not linked such that they form a single general inventive concept, as required by Rule 13.1 PCT.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2. Reference is made to the following documents:

- D1: EP-A-0 852 409 (MURATA MANUFACTURING CO) 8 July 1998 (1998-07-08)
D2: US 2001/049266 A1 (HAYATA KAZUKI ET AL) 6 December 2001 (2001-12-06)
D3: EP-A-0 828 143 (LUCENT TECHNOLOGIES INC) 11 March 1998 (1998-03-11)
D4: US-B-6 388 7991 (ARNONE DONALD DOMINIC ET AL) 14 May 2002 (2002-05-14)
D5: NUSS M C: "CHEMISTRY IS RIGHT FOR T-RAY IMAGING LASER, MICROWAVE, AND SIGNAL PROCESSING TECHNOLOGIES A PERFECT BLEND FOR APPLICATIONS IN PACKAGING, SECURITY, AND QUALITY CONTROL" IEEE CIRCUITS AND DEVICES MAGAZINE, IEEE INC. NEW YORK, US, vol. 12, no. 2, 1 March 1996 (1996-03-01), pages 25-30, XP000589127 ISSN: 8755-3996

In order to make the examination clearer, it will be carried depending on the first and the second invention.

INVENTION 1 (Claims 1-12)

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-4, 6-8, 10, 12 is not new in the sense of Article 33(2) PCT.

- 3.1. In this invention, the prior art has been identified as D1.

Document D1 discloses (the references in parentheses applying to this document):

A high frequency electrical signal control device, comprising a transmitter for generating a high frequency electrical signal, a receiver, a transmission line for propagating the electrical signal, and a structure for radiating the electrical signal propagated through the transmission line to the space or receiving a signal from the space (column 2, lines 54-58), wherein the degree of coupling of the electrical signal between the space and the transmission line provided by the structure can be variably controlled (column 3, lines 6-14).

Therefore, independent claim 1 is not novel.

- 3.2. Dependent claims 2-4, 6-8, 10, 12 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty, see document D1 and the corresponding passages cited in the search report.

4. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 5, 9, 11 does not involve an inventive step in the sense of Article 33(3) PCT.

- 4.1. Dependent claims 5, 9, 11 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D2 and D3 and the corresponding passages cited in the search report.

INVENTION 2 (Claims 13-24)

5. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 13, 14, 17, 18, 22, 23 is not new in the sense of Article 33(2) PCT.

- 5.1. In this invention, the prior art has been identified as D4.

The document D4 discloses (the references in parentheses applying to this document):

A high frequency electrical signal control device, comprising a generator for generating a high frequency electrical signal which serves as an element for converting a laser beam into an electromagnetic wave having a frequency lower than that of the laser beam, wherein a laser device (fig. 10, (209)) for generating a laser beam, an optical waveguide for propagating the laser beam to guide the laser beam to a generator (fig. 10), the generator (fig. 10, (207)) and a transmission line for propagating the signal are integrated in the same substrate (fig. 10, (201)).

- 5.2. Document D4 discloses all the additional features of dependent claims 14, 17, 18, 22, 23 (column 6, lines 1-8, lines 53-67, fig. 11,14).

6. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 15, 16, 19, 20, 24 does not involve an inventive step in the sense of Article 33(3) PCT.

- 6.2. The features of dependent claims 15, 19, 20, 24 have already been employed for the same purpose in a similar photoconductive switch, see document D5, page 26, middle column, line 1, right column, line 5, fig. 2. It would therefore be obvious to the person skilled in the art, to apply these features with corresponding effect to a high frequency signal control device according to document D4, thereby arriving at a high frequency signal control device according to the referred claims.

- 6.3. The additional features of dependent claim 16 are merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

Re Item VIII.

4. The application does not meet the requirements of Article 6 PCT, because claims 1, 2, 13, 14, 16, 17, 19, 21, 23, 24 are not clear.
- 4.1. Claims 1, 13, 17, 19, 21, 23, 24 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The following functional statements do not enable the skilled person to determine which technical features are necessary to perform the stated function:
- "a degree of coupling of the electrical signal between the space and the transmission line provided by the structure **can be variably controlled**" (Claim 1).
 - "a generator **for generating** a high frequency electrical signal which serves as an element for converting a laser beam into an electromagnetic wave having a frequency lower than that of the laser beam" (Claim 13).
 - "an electrical signal having a frequency corresponding to a difference in frequency between the two devices **is generated** from the generator" (Claim 17).
 - "a time waveform of the electrical signal of the short pulse **is measured** while the amount of delay is changed" (Claim 19).
 - "further comprising **means for deflecting** a direction of the electromagnetic wave radiated from the antenna" (Claim 21).
 - "**...are measured** using the high frequency electrical signal control device..." (Claim 23).
 - "**... to wirelessly measure** constituent elements, ..." (Claim 24).
- 4.2. Although claims 1 and 2 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought (control the degree of coupling of the electrical signal between the space and the transmission line) in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.
- 4.3. The following terms used in claims 14 and 16 are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear, Article 6 PCT:
- "the generator has a **waveguide type structure**"
 - "a dielectric member constituting the optical waveguide and a dielectric insulating layer constituting the transmission line **are formed of the same member**".